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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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5885

7590

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EXAMINER

DASTOURI, MEHRDAD

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/722,982

Applicant(s)

ACHARYA ET AL.

Examiner

Mehrdad Dastouri

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 8 and 10-14 is/are rejected.
- 7) ☒ Claim(s) 4-6, 9, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. Applicants' reply filed October 28, 2003, has been entered and made of record.
2. Applicants' arguments regarding Claims 1-3, 7, 8 and 10-14, have been fully considered but they are not persuasive.

Applicants argue in essence that prior art of record (Di Zenzo et al.) does not teach a pixel matrix based computing of the Euler number of a binary image, and there is no teaching of identifying a representation of a binary image in a pixel matrix wherein the pixel matrix comprises a plurality of portion.

The Examiner disagrees and indicates that Di Zenzo clearly disclose a binary image representation in a pixel matrix as disclosed in Section 1, Introduction, and further depicted in at least Figures 1 and 2. The binary image inherently comprises of a pixel matrix having "0" and "1" elements. Furthermore, runs of 1s in a column/row (run presentation) are also considered as a pixel matrix. Di Zenzo's invention computes Euler number from number of run in run representation and number of neighboring runs as disclosed in Sections 3.1 and 3.2.

3. Applicants' arguments regarding Claims 4, 9 and 15 (Pages 3 and 4 of the reply), have been fully considered and they are persuasive. Accordingly, rejections of Claims 4, 9 and 15 have been expressly withdrawn.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 7, 8 and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Di Zenzo et al (Run-Based Algorithm for Binary Image Analysis and Processing).

Regarding Claim 1, Di Zenzo et al disclose a method comprising:

identifying a representation of a binary image in a pixel matrix, wherein the pixel matrix comprises a plurality of portions (Introduction, Page 83, Column 2, Paragraphs 1-4);

computing the number of runs for a first portion of the pixel matrix, wherein a run is a maximal sequence of pixels having a predetermined value in the first portion (Introduction, Page 83, Column 2, Paragraph 3; Page 84, Column 1, Section 2, Paragraphs 1 and 2; Figure 1. Runs are specified by a set three integers $S = \{(x_1, y_1, z_1), \dots, (x_N, y_N, z_N)\}$. In a vertical run "i", the number of sequence of pixels having a predetermined value (i.e., 1 or 0) is (y_i, z_i) .);

computing the number of neighboring runs between the first portion and a second portion of the pixel matrix, wherein a neighboring run is a run in which at least one pixel of the run is in the neighborhood of a run in an adjacent portion (Figure 1; Pages 84-85, Section 2, in particular Section 2, Paragraphs 3-8); and

computing the Euler number from the number of runs and the number of neighboring runs (Figure 1; Page 85, Sections 3.1 and 3.2).

Regarding Claim 2, Di Zenzo et al disclose the method of Claim 1, computing the number of runs for a first portion of the pixel matrix further comprising:

identifying one or more runs of the first portion (Introduction, Page 83, Column 2, Paragraph 3; Page 84, Column 1, Section 2, Paragraphs 1 and 2; Figure 1);

counting the number of runs (Figure 1; Page 84, Section 2, Paragraphs 1-8. Runs are specified by a set three integers $S = \{(x_1, y_1, z_1), \dots, (x_N, y_N, z_N)\}$. In a vertical run "i", the number of sequence of pixels having a predetermined value (i.e., 1 or 0) is (y_i, z_i)).

Regarding Claim 3, Di Zenzo et al disclose the method of Claim 2, computing the number of neighboring runs between the first portion and a second portion of the pixel matrix further comprising:

determining a neighborhood size (Figure 1; Page 84, Section 2, the neighborhood comprising of sequence of adjacent runs P_1, P_2, \dots, P_n);

identifying a second run in the second portion (Figure 1, runs in portions 2 through 7; Pages 84-85, Sections 2, 3.1 and 3.2); and

determining whether at least one pixel of the second run is in the neighborhood of the run (Figure 1; Pages 84-85, Sections 2, 3.1 and 3.2).

With regards to Claims 7 and 8, arguments analogous to those presented for Claims 1 and 2 are applicable to Claims 7 and 8.

Regarding Claim 10, Di Zenzo et al disclose the system of Claim 7, wherein the portions comprise rows of the pixel matrix (Page 83, Section 1, Paragraph 3).

Regarding Claim 11, Di Zenzo et al disclose the system of Claim 7, wherein the portions comprise columns of the pixel matrix (Page 83, Section 1, Paragraph 3).

With regards to Claim 12, arguments analogous to those presented for Claim 1 are applicable to Claim 12.

With regards to Claim 13, arguments analogous to those presented for Claim 2 are applicable to Claim 13.

With regards to Claim 14, arguments analogous to those presented for Claim 3 are applicable to Claim 14.

Allowable Subject Matter

6. Claims 4-6, 9, 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 4 of the instant invention recites the method of Claim 3, computing the Euler number from the number of runs and the number of neighboring runs further comprising:

subtracting the number of neighboring runs between the first portion and the second portion from a sum of the number of runs in the first portion and the second portion to arrive at a result ; and

adding the result to an Euler number for a third portion.

Claim 9 of the instant invention is directed to the system corresponding to the methodology of Claim 4, and is therefore allowable.

Claim 15 of the instant invention is directed to the software storage medium corresponding to the methodology of Claim 4, and is therefore allowable.

The features identified, in combination with other claim limitations, are neither discussed nor suggested by the prior arts of record.

Claims 5 and 6 depend on Claim 4, and are therefore allowable.

Claim 16 depends on Claim 15, and is therefore allowable.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology Center Customer Service Office whose telephone number is (703) 306-0337.

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri

Mehrdad Dastouri
Primary Examiner
Group Art Unit 2623
January 21, 2004